Abbes Laghrour University of Khenchela Exam in Communication Networks Level: Second-year undergraduate in computer science

Name:

Group:

QCM: For each question, select the correct answer (s). Each question is worth 1 point.

1. What is a communication network?

- A. A method to connect only computers using cables.
- B. A system that enables data exchange between interconnected devices.
- C. A type of software that sends emails.
- D. A tool for configuring routers.

2. What is a protocol in computer networks?

A. A piece of hardware that transmits data.

- B. A set of rules that define how devices communicate.
- C. A command-line tool for configuring servers.
- D. A password protection method.

3. What does a specification define in network systems?

- A. The physical structure of a data center.
- B. A general purpose for using a network.
- C. The technical details of how a system or protocol should operate.
- D. The encryption used in emails.

4. Which statement best describes the relationship between specification and protocol?

A. A protocol defines specifications.

- B. A specification defines how a protocol should behave.
- C. They are the same thing.
- D. A specification is optional, while a protocol is required.

5. What is the main purpose of encoding techniques in the physical layer?

- A. To compress data for storage.
- B. To detect network congestion.
- C. To transform digital data into signals suitable for transmission.

D. To encrypt data during transmission.

6. Which encoding technique introduces a transition in the middle of each bit period, making clock recovery easier?

- A. NRZ.
- B. Manchester.
- C. AMI.
- D. Differential NRZ.

7. If a system transmits 2 bits per symbol and the baud rate is 1000 baud, what is the bit rate? A_{200} bac

- A. 500 bps
- B. 1000 bps
- C. 2000 bps
- D. 250 bps

8. What is the primary advantage of fiber optic cables?

- A. Low cost.
- B. High bandwidth.
- C. Easy installation.
- D. Short transmission distance.

9. Which device converts digital signals to analog for telephone line transmission?

- A. Router
- B. Switch
- C. Modem
- D. Hub

10. Which topology is best for a military communication system requiring high redundancy?

- A. Bus
- B. Star
- C. Mesh
- D. Ring

11. Which layer of the OSI model handles data compression and encryption?

- A. Presentation
- B. Session
- C. Application
- D. Network

12. Which topology requires the least amount of cabling?

- A. Star
- B. Mesh
- C. Bus
- D. Ring
- 13. If the polynomial generator is x^4+x^2+x , and we would like to send the message 1111011101, what is the CRC to add?
 - A. 1110
 - B. 0101
 - C. 1100
 - D. 0010
- 14. What is the name of the encoding technique used to represent the sequence given below?



- A. Manchester.
- B. Miller.
- C. Differential Manchester.
- D. NRZ.

15. What is the sequence given in question 15?

- A. 01000011000
- B. 10000101111
- C. 01111010000
- D. 10111100111

16. Why are baseband transmission techniques unreliable for long distances?

- A. They require too many cables.
- B. The digital signal degrades quickly.
- C. They only work with fiber optics.
- D. They are too expensive.

17. What is the solution for transmitting signals over long distances?

- A. Using digital repeaters.
- B. Modulating the signal into an analog sinusoidal form.
- C. Increasing signal voltage.
- D. Changing transmission medium.

18. What is the main purpose of multiplexing in telecommunications?

- A. To increase signal strength.
- B. To allow multiple signals to share one transmission medium.
- C. To encrypt data for security.
- D. To reduce network latency.

19. What does the Nyquist theorem determine?

- A. Maximum data rate for noiseless channels.
- B. Minimum sampling rate for signal reconstruction.
- C. Channel capacity in noisy environments.
- D. Error correction capabilities.

20. The Shannon theorem gives:

A. The theoretical maximum channel capacity.

- B. The minimum bandwidth required.
- C. The optimal modulation technique.
- D. The sampling frequency needed.